CYCLE	OPERATION	BANK
0	READ	0
1	WRITE	1
2	READ	2
3	WRITE	3
4	PAUSE	
5	WRITE	0
6	READ	1
7	WRITE	2
8	READ	3
9	PAUSE	

FIG.1

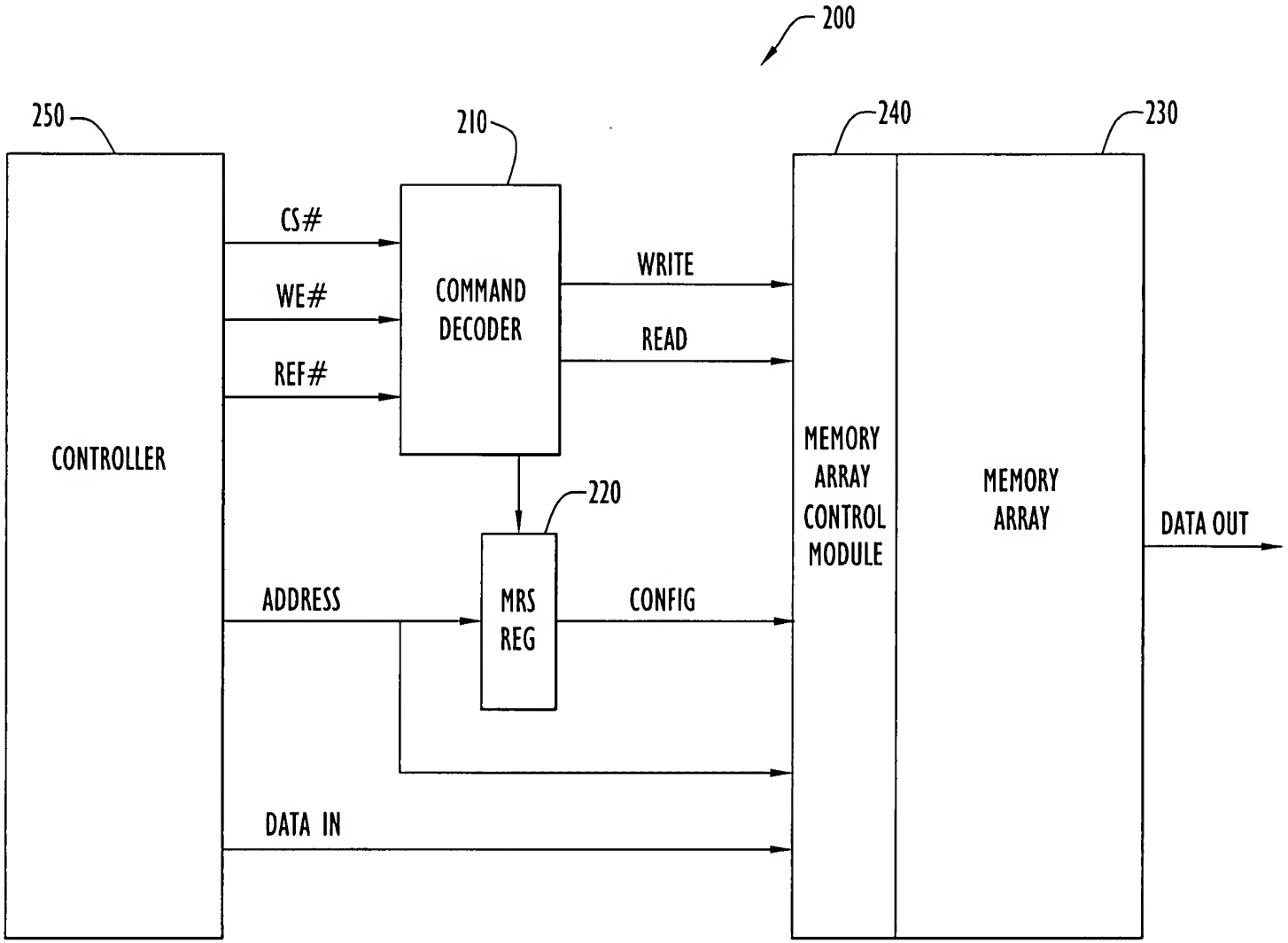
200
250
210
240
230
CONTROLLER
CS#
WE#
REF#
COMMAND DECODER
WRITE
READ
MEMORY ARRAY CONTROL MODULE
MEMORY ARRAY
DATA OUT
220
ADDRESS
MRS REG
CONFIG
DATA IN

FIG.2

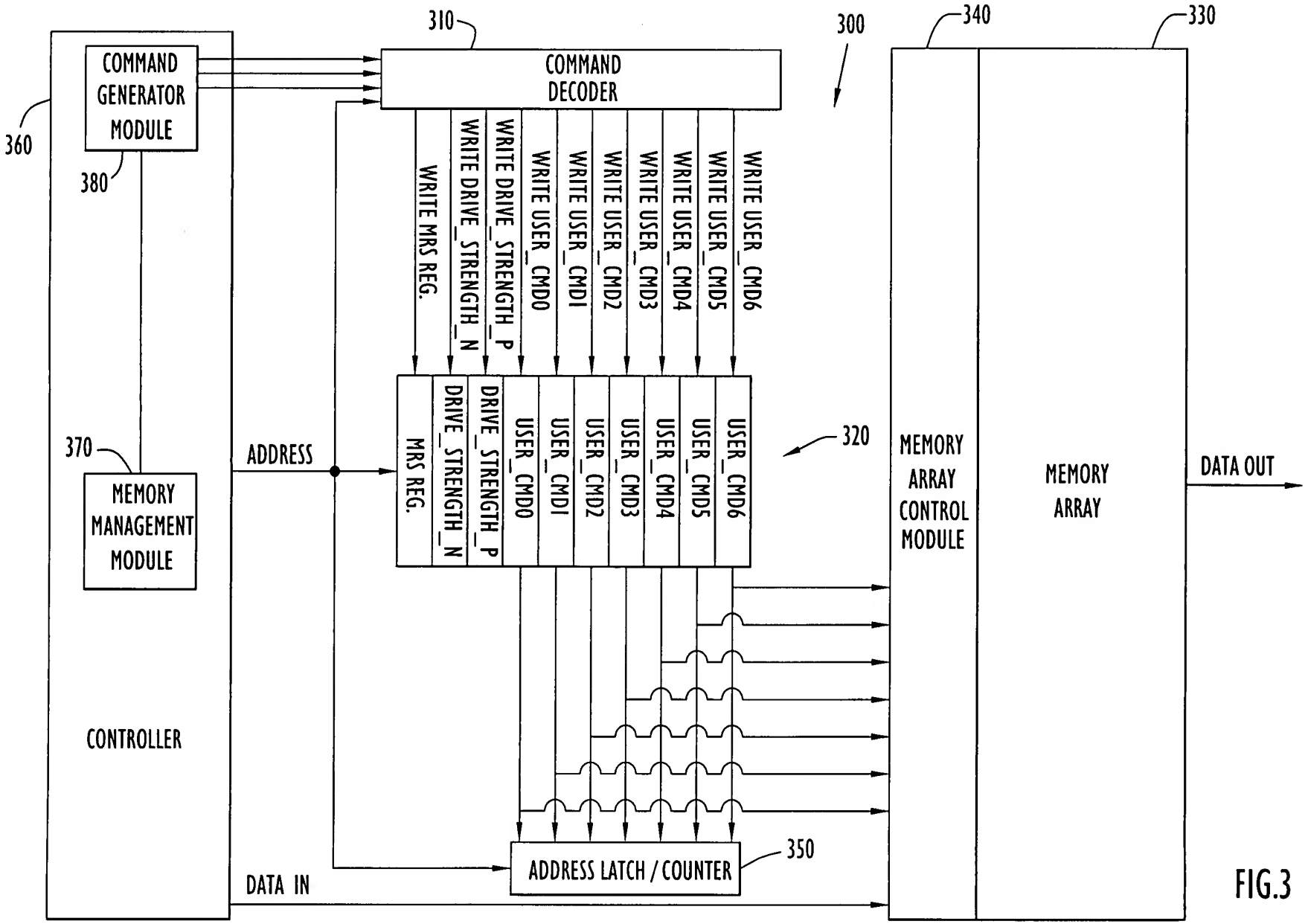
310
300
340
330
360
COMMAND GENERATOR MODULE
380
COMMAND DECODER
WRITE MRS REG.
WRITE DRIVE_STRENGTH_N
WRITE DRIVE_STRENGTH_P
WRITE USER_CMD0
WRITE USER_CMD1
WRITE USER_CMD2
WRITE USER_CMD3
WRITE USER_CMD4
WRITE USER_CMD5
WRITE USER_CMD6
370
ADDRESS
MRS REG.
DRIVE_STRENGTH_N
DRIVE_STRENGTH_P
USER_CMD0
USER_CMD1
USER_CMD2
USER_CMD3
USER_CMD4
USER_CMD5
USER_CMD6
320
MEMORY ARRAY CONTROL MODULE
MEMORY ARRAY
DATA OUT
MEMORY MANAGEMENT MODULE
CONTROLLER
ADDRESS LATCH / COUNTER
350
DATA IN

FIG.3

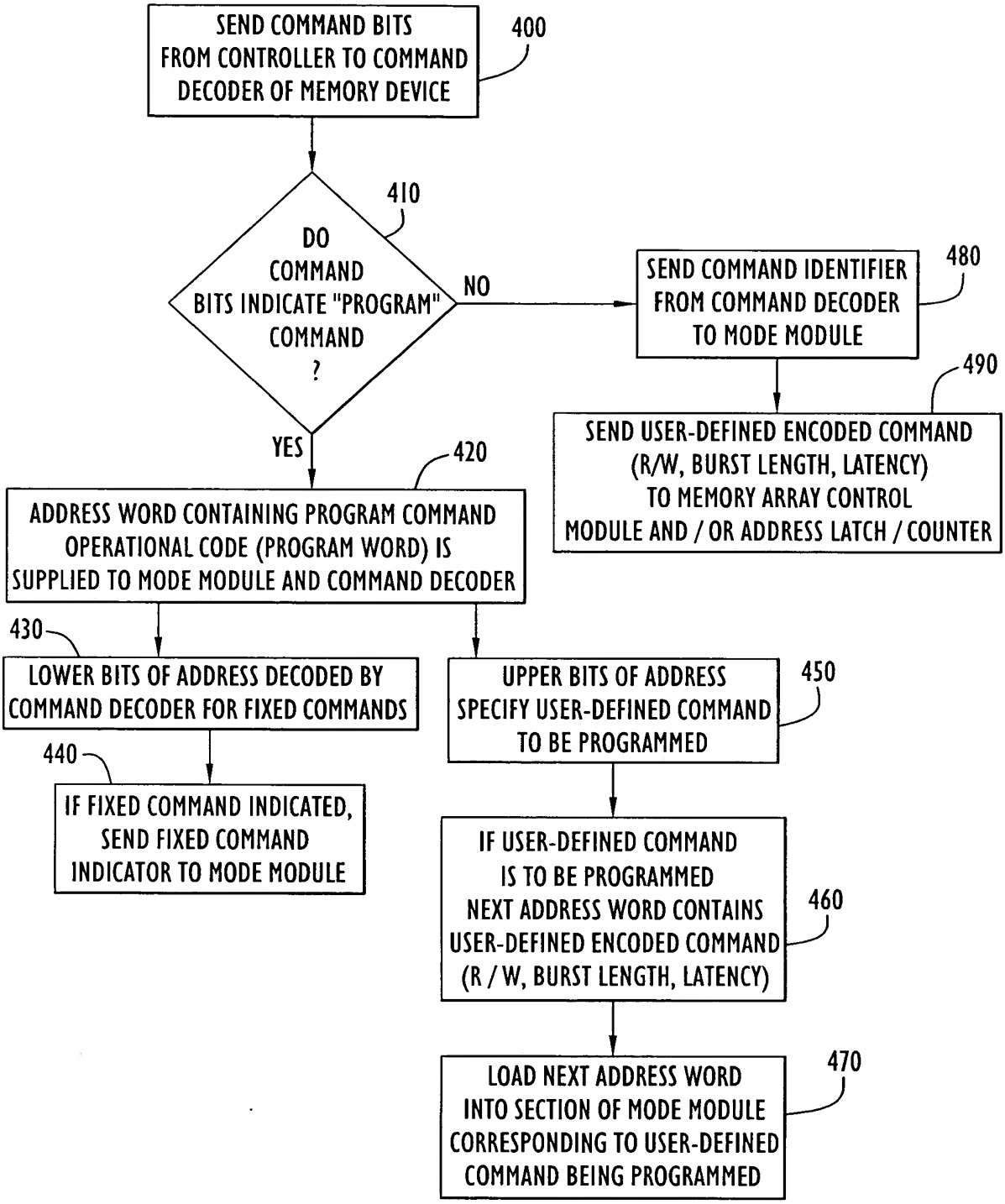
SEND COMMAND BITS FROM CONTROLLER TO COMMAND DECODER OF MEMORY DEVICE
400
DO COMMAND BITS INDICATE "PROGRAM" COMMAND ?
410
NO
SEND COMMAND IDENTIFIER FROM COMMAND DECODER TO MODE MODULE
480
SEND USER-DEFINED ENCODED COMMAND (R/W, BURST LENGTH, LATENCY) TO MEMORY ARRAY CONTROL MODULE AND / OR ADDRESS LATCH / COUNTER
490
YES
420
ADDRESS WORD CONTAINING PROGRAM COMMAND OPERATIONAL CODE (PROGRAM WORD) IS SUPPLIED TO MODE MODULE AND COMMAND DECODER
430
LOWER BITS OF ADDRESS DECODED BY COMMAND DECODER FOR FIXED COMMANDS
440
IF FIXED COMMAND INDICATED, SEND FIXED COMMAND INDICATOR TO MODE MODULE
UPPER BITS OF ADDRESS SPECIFY USER-DEFINED COMMAND TO BE PROGRAMMED
450
IF USER-DEFINED COMMAND IS TO BE PROGRAMMED NEXT ADDRESS WORD CONTAINS USER-DEFINED ENCODED COMMAND (R / W, BURST LENGTH, LATENCY)
460
LOAD NEXT ADDRESS WORD INTO SECTION OF MODE MODULE CORRESPONDING TO USER-DEFINED COMMAND BEING PROGRAMMED
470

FIG.4

CMD[2:0]	COMMAND	ADDRESS
0	FIXED_COMMAND/PROGRAM	OP_CODE
1	USER_CMD0	A
2	USER_CMD1	A
3	USER_CMD2	A
4	USER_CMD3	A
5	USER_CMD4	A
6	USER_CMD5	A
7	USER_CMD6	A

FIG.5

ADDRESS	COMMAND	DESCRIPTION
0	NOP	CHIP DESELECT / NO OPERATION
1	AUTO REFRESH	AUTO REFRESH COMMAND
2	MRS	MODE REGISTER SET
3	N_DRIVE	DRIVE_STRENGTH_N
4	P_DRIVE	DRIVE_STRENGTH_P
5-15	RESERVED	X
16	USER_CMD0	COMMAND_DEFINITION
17	USER_CMD1	COMMAND_DEFINITION
18	USER_CMD2	COMMAND_DEFINITION
19	USER_CMD3	COMMAND_DEFINITION
20	USER_CMD4	COMMAND_DEFINITION
21	USER_CMD5	COMMAND_DEFINITION
22	USER_CMD6	COMMAND_DEFINITION
23-MAX	RESERVED	X

FIG.6

BITS	DESCRIPTION
0	0 = DLL DISABLED 1 = DLL ENABLED
1	0 = ADDRESS NON-MULTIPLEXED 1 = ADDRESS MULTIPLEXED
2	0 = 50 OHM INTERNAL CALIBRATION 1 = EXTERNAL CALIBRATION RESISTOR
3	0 = ON DIE TERMINATION DISABLED 1 = ON DIE TERMINATION ENABLED
4-MAX	RESERVED

FIG.7

BITS:	DESCRIPTION:
3:0	READ LATENCY
7:4	WRITE LATENCY
11:8	BURST LATENCY
15:12	COMMAND
20:16	RESERVED

FIG.8

ENCODING	READ / WRITE LATENCY
0-1	RESERVED
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9-15	RESERVED

FIG.9

ENCODING	BURST LENGTH
0	2
1	4
2	8
3	16
4	32
5	64
6	128
7-14	RESERVED
15	FULL PAGE

FIG.10

ENCODING	COMMAND
0	TERMINATE
1	READ
2-8	RESERVED
9	WRITE
10-15	RESERVED

FIG.11